

THERE IS CLAIMED:

1 1. An electrical circuit inspection apparatus
2 comprising:

3 a first inspection functionality operative to obtain
4 first attribute information with respect to a
5 conductor location on an electrical circuit;

6 a second inspection functionality operative to obtain
7 second attribute information with respect to said
8 conductor location on said electrical circuit; and

9 a conductor attribute analyzer receiving said first
10 attribute information and said second attribute
11 information, and evaluating a combination of said
12 first attribute information and said second attribute
13 information to determine an inspection attribute of a
14 conductor at said conductor location.

1 2. The electrical circuit inspection apparatus
2 according to claim 1, wherein said first inspection
3 functionality senses reflectivity at said conductor
4 location as a basis for said first attribute information.

1 3. The electrical circuit inspection apparatus
2 according to claim 2, wherein said first inspection

3 functionality determines a top width dimension of said
4 conductor based on said sensed reflectivity.

1 4. The electrical circuit inspection apparatus
2 according to claim 1, wherein said second inspection
3 functionality senses luminescence at said conductor
4 location as a basis for said second attribute
5 information.

1 5. The electrical circuit inspection apparatus
2 according to claim 4, wherein said second inspection
3 functionality determines a bottom width dimension of said
4 conductor based on said sensed luminescence.

1 6. The electrical circuit inspection apparatus
2 according to claim 3, wherein said second inspection
3 functionality senses luminescence at said conductor
4 location as a basis for said second attribute
5 information.

1 7. The electrical circuit inspection apparatus
2 according to claim 6, wherein said second inspection
3 functionality determines a bottom width dimension of said
4 conductor based on said sensed luminescence.

1 8. The electrical circuit inspection apparatus
2 according to claim 7, wherein said inspection attribute
3 is a cross section configuration of said conductor.

1 9. The electrical circuit inspection apparatus
2 according claim 7, wherein said attribute analyzer
3 comprises an impedance analyzer receiving said top width
4 dimension and said bottom width dimension for a plurality
5 of conductor locations, and determining therefrom an
6 impedance attribute of said conductor.

1 10. An electrical circuit inspection method comprising:
2 obtaining first attribute information of a plurality of
3 conductor locations on an electrical circuit;
4 obtaining second attribute information of said plurality
5 of locations; and
6 determining an inspection attribute of a conductor at
7 one or more of said conductor locations based on a
8 combination of said first attribute information and
9 said second attribute information.

1 11. The electrical circuit inspection method according
2 to claim 10, wherein said providing of said first

3 attribute information comprises sensing a reflectivity
4 value.

1 12. The electrical circuit inspection method according
2 to claim 11, wherein said providing of said first
3 attribute information further comprises:

4 receiving said reflectivity value, for said one or more
5 conductor locations; and
6 determining therefrom a top width dimension of said
7 conductor.

1 13. The electrical circuit inspection method according
2 to claim 10, wherein said providing of said second
3 attribute information comprises sensing a luminescence
4 value.

1 14. The electrical circuit inspection method according
2 to claim 13, wherein said providing of said second
3 attribute information further comprises:

4 receiving said luminescence value for said one or more
5 conductor locations; and
6 determining therefrom a bottom width dimension of said
7 conductor.

1 15. The electrical circuit inspection method according
2 to claim 10, and wherein said providing of said second
3 attribute information comprises sensing a height value.

1 16. The electrical circuit inspection method according
2 to claim 15, wherein said providing of said second
3 attribute information further comprises sensing set
4 height value based on a topographical profile.

1 17. The electrical circuit inspection method to claim
2 12, wherein said providing of said second attribute
3 information comprises sensing a luminescence value.

1 18. The electrical circuit inspection method according
2 to claim 15, wherein said providing of said second
3 attribute information further comprises:

4 receiving said luminescence value for said one or more
5 conductor locations; and
6 determining therefrom a bottom width dimension of said
7 conductor.

1 19. The electrical circuit inspection method according
2 to claim 16, further comprising determining, as said
3 inspection attribute, a cross section configuration of

4 said conductor based on said top width dimension and said
5 bottom width dimension.

1 20. The electrical circuit inspection method according
2 claim 16, further comprising determining, as said
3 inspection attribute, an impedance attribute of said
4 conductor, based on said top width dimension and said
5 bottom width dimension for said one or more conductor
6 locations.

1 21. The electrical circuit inspection method according
2 claim 10, further comprising employing said inspection
3 attribute to determine a defect in a process used to
4 fabricate said electrical circuit.

1 22. The electrical circuit inspection method according
2 to claim 10, further comprising making a production
3 determination based on said inspection attribute.

1 23. The electrical circuit inspection method according
2 to claim 22, wherein said production determination is one
3 of:

4 approving said electrical circuit;
5 discarding said electrical circuit; and
6 repairing said electrical circuit.

1 24. Electrical circuit inspection apparatus comprising:
2 at least one inspection functionality operative to
3 provide information regarding a cross-sectional
4 configuration of a conductor; and
5 an impedance calculator operative to employ said
6 information regarding said cross-sectional
7 configuration of said conductor in order to provide
8 output data indicative of the impedance of said
9 conductor.

1 25. Electrical circuit inspection apparatus according to
2 claim 24 and wherein said at least one inspection
3 functionality comprises:
4 a reflection sensor operative to sense reflectivity of
5 said conductor; and
6 a luminescence sensor operative to sense luminescence of
7 said conductor.

1 26. Electrical circuit inspection apparatus comprising:
2 a top dimension calculator operative to calculate a top
3 dimension of a conductor portion in an electrical
4 circuit;

5 a bottom dimension calculator operative to calculate a
6 bottom dimension of a conductor in an electrical
7 circuit; and
8 a cross section configuration analyzer operative to
9 receive top dimension calculations for a multiplicity
10 of conductor portions, and bottom dimension
11 calculations for said multiplicity of conductor
12 portions and output a report of said top dimensions
13 and said bottom dimensions.

1 27. An electrical circuit inspection method comprising:
2 inspecting at least one conductor to provide cross
3 sectional information of a conductor; and
4 employing said cross-sectional information to provide
5 output data indicative of the impedance of said
6 conductor.

1 28. An electrical circuit inspection method according to
2 claim 27 and wherein said inspecting comprises:
3 sensing reflectivity of said conductor; and
4 sensing luminescence of a substrate in a vicinity of
5 said conductor.

1 29. Electrical circuit inspection method comprising:

2 calculating, at a plurality of sampling points, a
3 surface dimension of a conductor portion in an
4 electrical circuit;
5 calculating, at said plurality of sampling points, a
6 footprint dimension of said conductor portion in said
7 electrical circuit;
8 analyzing said surface dimensions and said footprint
9 dimensions for said plurality of sampling points; and
10 outputting a report based on said surface dimensions and
11 said footprint dimensions.

1 30. A method for manufacturing an electrical circuit,
2 comprising:
3 using equipment to provide a printed circuit board
4 having at least one conductor on a substrate;
5 inspecting said printed circuit board to obtain a
6 surface dimension value corresponding to a surface
7 dimension of said at least one conductor;
8 inspecting said printed circuit board to obtain a
9 footprint dimension value corresponding to a
10 footprint dimension of said at least one conductor;
11 and

12 ' adjusting said equipment based on one or more of said
13 surface dimension value and said footprint dimension
14 value.

1 31. A method for manufacturing an electrical circuit,
2 comprising:

3 forming at least one conductor on a substrate to provide
4 a printed circuit board;

5 inspecting said printed circuit board to obtain cross-
6 section information for said at least one conductor;

7 making a production determination based on said cross-
8 section information.

1 32. The method for manufacturing an electrical circuit
2 as set forth in claim 31, wherein said production
3 determination is one of:

4 approving said printed circuit board;

5 discarding said printed circuit board; and

6 repairing said circuit board.

1 33. The method for manufacturing an electrical circuit
2 as set forth in claim 31, wherein said cross-section
3 information includes a surface dimension and a footprint
4 dimension of said at least one conductor.